

MARINE POLLUTION AS A WEAKNESS FACTOR IN INDONESIAN SHIP BUSINESS ACTIVITY -

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ABSTRACT

The increasing use of ship for the carriage of goods, oil, passengers has been very useful for the growth of the industry and has benefit for all parties. Otherwise, there are many aspects of the hazards associated with pollution maritime been neglected in the past. Whereas it needs an advance attention from the regulatory body and the general public as well. Marine environment plays a very important role in maintaining the balance in the global ecosystem as a whole. The damage of the environment will result in long-term weakness. The method used in this study is an analytical description. The research was conducted by collecting primary, secondary and tertiary legal materials through library and field research, and then analyzed with qualitative method. Based on the results of this study, it is obvious that: Every year, ship accidents never decrease even though the government has made improvement in the regulations on sea feasibility not only in national law but also in ratifying several international conventions. Factors concerning business shipping are insufficient marine transportation safety, high risk, high cost of marine safety and marine environmental pollution.

Keywords: *Marine Pollution, Shipping Business Activities, Marine environment*

I. INTRODUCTION

Indonesia is an archipelagic state which consists of 18,108 islands with 52,000 kilometers of coast line and extends more than 5,000 kilometers from east to west and more than 3,000 kilometers from north to south crossing ocean and the equator; ¹ Hence, sea transportation is very critical. Based on its functions; sea carriage is an artery for the Indonesian economy, social, politics, culture, defense, and security. ² Moreover, considering that Indonesia lies between two continents and two oceans and has critical sea-lanes in the Indian and Pacific Oceans, sea carriage plays an important role in international relationships, in addition to keeping the stability and the harmony of the Nation. Geographically, Indonesia is spread over vast expanses of ocean, and this

¹ Robert Crib and Michele Ford, *Indonesia Beyond the Water's Edge, Managing an Archipelagic State*, Singapore: ISEAS, p.1

² Tjuk Sukardiman in Husseyn Umar (2002), *Hukum Maritim dan Masalah-masalah Pelayaran di Indonesia*, Bandung : Pustaka Sinar Harapan, at p. ii.

condition makes sea transport service be extremely necessary for reaching all the islands of Indonesia. Therefore, sea carriage functions not only to transport passengers and goods from one place to another, but also to keep all areas together as a nation.³ For these reasons, sea carriage service is vital for open access to connect both developed areas and isolated ones. Because the role of transportation is important for Indonesia, the country has a great interest in keeping the sea as a medium of transportation. The Sea of Indonesia consists of many straits and areas that are strategic and vital for connections between the Indian Ocean and Pacific Ocean. It means that the Indonesian Sea plays a significant role not only for commercial vessels but also for the warships, including submarines.⁴

Indonesia should become more capable of retaining and receiving benefits from this position to increase the development of shipping business opportunity. Unfortunately, the use of the sea by Indonesian ships has faced difficulties because these ships cannot compete with foreign vessels. This is because many inter-isle transportations use foreign ships, and foreign vessels carry mostly of the exported and imported goods. Consequently, Indonesia pays a huge sum of money, amounting to about US\$ 10 billion annually, to finance the transportation of non-oil and gas exports.⁵ Even though, based on the *cabotage* principle in the Indonesian Shipping Law Act 2008, the principle stated that foreign shipping companies are only permitted to enter international ports. Indonesian shipping Law Act 2008 provides that coastal shipping, namely, domestic shipping, is to be performed by Indonesian flagged ships⁶. In fact, non-Indonesian vessels can come easily into any port as they wish. In the implementation of Asia-China Free Trade Area, estimates suggest that the traffic of cargo by the sea will be so great that the time is right for Indonesian vessels to anticipate global competition. In 2010, there were 20 million dead weight tons (DWT) of vessels needed to load 250 million tons of domestic cargo and 450 million tons of international cargo. In the same year, total sea cargo was recorded as of 552.6 million tons consisting of 149.9 million tons of international cargo and 412.7 million of domestic cargo. Ironically, national ships could only ship 22.48 million tons of the total potential of international cargo; in contrast, foreign vessels loaded 390.25 million tons or 94.55%. With respect to domestic cargo, national ships could only carry 89.9 million tons or 59.9% of the total, and foreign ships carried 59 million tons or about 40.0%.⁷

These figures clearly contradict the *cabotage* principle as mentioned in Presiden Instruction (*INPRES*) 5/2005 and Law No. 17, 2008 concerning shipping. Based on this principle, domestic cargos should be carried by Indonesian flagged ships. However, the application of this *cabotage* principle, which says that Indonesian ships should be used to export from/and import to Indonesia and inter-isle transportation, cannot be applied easily. This is because foreign vessels, including ships of Flag of Convenience (FOC), appoint Indonesian shipping companies as their agents and also its ports are in Indonesia. Additionally, the low performance and competitive power of Indonesian shipping

³ Imam Subekti, *Implementasi Perjanjian Pengangkutan Penumpang Angkutan Laut antar Pulau di Indonesia*, PHD Thesis, (2003) at p. 2.

⁴ Hasjim Djalal, *Negara Kepulauan Menuju Negara Maritim*, IKAPI JAYA, Jakarta: 2009. at p. 103

⁵ *Ibid.*

⁶ M. Husseyn Umar, *Hukum Maritim dan Masalah-masalah Pelayaran di Indonesia*, Jakarta Sinar Harapan, (2011) at p. 271.

⁷ Kardady, *Tinjauan Transportasi Laut Internasional Indonesia*, paper <http://kardady.wordpress.com/2010/01/05/>.

threatens governance of sea transportation. This threat can be seen from the business indications shown by the low market target/access. While Indonesia was once known for its maritime transportation, unfortunately, Indonesia has been left behind by neighboring countries such as Malaysia and Singapore today. Until the mid-1980s, Indonesia, in fact, could still compete with them.⁸ By 2010, foreign vessels carried 94.5% of foreign cargo while foreign vessels carried 40% of Indonesian domestic cargo that same year.⁹ Whatever the case, the assumption nowadays is that the national shipping company is only acting as an agent for the foreign ships. This condition puts Indonesia in a powerless condition in reducing inefficient sources in sea transportation.

II. FACTORS OF THE WEAKNESS IN INDONESIAN SHIP BUSINESS ACTIVITY

Factors concerning transportation include: insufficient marine transportation safety and high risk, high cost of marine safety and marine environmental pollution. . In the field of maritime law, the environment is something that can not be ignored because the marine environment is a tool in the management of marinetransportation . Marine environmental pollution has the potential to disturb all shipping transportation activities. In addition to low performance and competition factors, the natural condition of Indonesia worsens the potential for pollution problems. The geographic position of the Indonesian seas resting between two continents-Asia and Australia and two oceans – Indian and Pacific ocean makes the Indonesian seas a strategic path to sail, especially with the advent of globalization that brings changes in existing transportation systems and increases in traffic across those seas. Naturally, with the increase in the traffic of vessels sailing or harboring in Indonesia waters come the potential for increased collisions and pollution.

The natural conditions making the legal situation more difficult is the large spread of islands, expanse of water and the effects of monsoon cycle as main determiners of Indonesian climate.¹⁰ The wind so extremely influences the direction of sea flow that knowledge about the flow and wind is critical for the safety of shipping. Collisions that occurs in the South China Sea, Java Sea, generally because of the heavy currents and wind.¹¹ Hence, some sea routes in Indonesian waters offer dangerous natural conditions for ship safety.

As described in earlier. until now ship accidents are something that we must be concerned of. Every year ship accidents never decrease even though the government has made improvement in the regulations on sea feasibility not only in national law but also in ratifying several international conventions.

⁸ Alan Jeffrey Dompas, *75 Tahun Hasjim Djalal, Negara Kepulauan Menuju Negara Maritim*, IKAPI JAYA, Jakarta, (2009), at p. 253.

⁹ *Muhammad Subhan, Port, Maritime Ans Hinterland Development in Southeast Asia*, Sintok, UUM Press, 2014,p. 75.

¹⁰ Departemen Perbuhungan : Badan Penelitian dan Pengembangan , *Penelitian Kecelakaan Kapal di Indonesia dan Upaya Mengatasinya*. Journal of Pusat Penelitian dan Pengembangan Perhubungan Laut, Jakarta, (2010) at p. 1.

¹¹ Rusniah Ahmad and Irma Rachmawati, Implementation of P&I for Indonesian Ship, A Compliance to Common Law System, International Journal of Applied Business and Economic Research, Volume 14, Number 6 (III), 2016, p. 4783.

The government has not been able to solve essential sea transportation involving port checking system, ship feasibility, up to shipping company’s bad management. The number of ship accidents in Indonesia is apprehensive, especially during 2009-2013, by the existence of 903 cases. In 2009, there were 159 accident cases, in 2010: 137 accidents, in 2011: 124 accidents, in 2012: 128 accidents, and in 2013: 145 accidents . At average there was an increase of 17% in the last 6 years. The kinds of accidents which occurred at average for the last 5 years (2009-2013) were sinking (37%), running aground (13%), collision (15%), fire (18%) and other kinds of accidents (17%). See Table 1) Whereas According to Directorate General of Sea Communication the causes of the ship accidents were 37% of human error, 23% of technical fault, 38% of nature condition and 2% of other causes as described in the following table.¹²

Table 1
The Factors of Accidents¹³

	Year	Human	Natural condition	Technically
1.	2009	52	43	31
2.	2010	43	84	24
3.	2011	31.	99	48
4.	2012	24	78	66
5.	2013	37	75	25

Some components of ship accidents in Indonesia which cause high rate of sea accidents are related to the lack of qualified instructors, especially in private sea transportation training.¹⁴ There are very limited visual displays and ships for cadet to practice, so that there are so many cadets who are hampered to have their sea practice. Besides, the implementation of International Ship & Port Facility Security Code (ISPS Code) has not entirely been integrated, not to mention the sufficiency and liability of navigational equipment are relatively low. Guiding and tug boats in several ports are not sufficient either in number or technical condition. Coast guard patrol ships or GAMAT/KPLP ships owned now are still not enough in quantity and quality.

II.I. Supporting factors on Safety of Shipping
II.I.1 Marine Inspector

The frequency of ship accidents occurred in our country, especially during 2009 - 2013, gave a big question concerning the performance of the Marine Inspector. Has the marine inspector performed his obligation? For example, sound system which does not properly work to warn emergency situation on the ship (emergency alarm system), in case MV Teratai Permai

¹² Lasse, Business Transportation Management, Sea Transportation, Charter and Claim, Jakarta : Pt Graffindo Indonesia, 2015, P. 468.

¹³ Ibid.

¹⁴ Pieter Batti, Keselamatan Pelayaran dan Pencegahan Pencemaran dari Kapal. Jakarta. PT Konsultasi Buana Maritim Nusantara,2011, p 141

which does not open when touching sea surface, and sprinkler which cannot spray water when there is fire¹⁵. Even though alarm, davit and sprinkler do not function but in fact those are stated feasible in the certificate.

Marine Inspector begins to work once a ship is built in the dock. The inspector checks whether the construction of ship flank, electricity and ship machinery, and other things have met the requirements as stated in Safety of Life at Sea (SOLAS). In practice, every country can delegate the work done by Marine Inspector to another party and it is based on the country's classification. But, in Indonesia, this duty has not been given fully to BKI (*Biro Klasifikasi Indonesia or Indonesian Bureau of classification*) /¹⁶. Only countries of flag of convenience (FoC) which delegate ship safety inspection aspects to foreign classification because they do not have it.

In Indonesia, Ministry of Transportation as the one who holds the authority of applying SOLAS – in IMO, it is said as the Administration – has given the authority of checking ship flank, electricity and ship machinery to Indonesian Bureau of Classification or BKI. Whereas other aspects, such as; radio installation, feasibility of safety equipment on board of the ship, etc are still carried out directly by the Ministry of Transportation through its Marine Inspector. That condition is commonly said by domestic ship owners as multiple classification. At first, the classification done by BKI and then is further classified by the Ministry of Transportation. In other countries, the authorized party usually conducts the classification will do all work related to ship safety aspects because the government has handed over the authority to the authorized party.

II.1.2. The Performance of Marine Inspector of Ministry of Transportation

Having known the testimonies from the survivors from various accidents in Indonesia and the findings from the authorities who investigated the causes of the accidents, it is revealed that most of the victims died from falling because the safety equipment available onboard the ships were not sufficient or did not function as they should be.

In the fire case of KM Levina, it was revealed that the sprinkler to extinguish the fire did not work. Whereas in KM Teratai Prima accident, as revealed by the survivors, there was no announcement whatsoever from the crew that there was an emergency situation. Ironically, referring to the certificate for safety equipment, those ships had completed certificates. Even in the case of KM Teratai Prima, the ship just underwent docking.

The question is whether the certificates issued by the Ministry of Transportation was after the overall inspection by the Marine Inspector? It is not to blame, but it seems that the safety equipment were not checked in detail.

The cause of ship accident as the result of storm or ebb tide relatively easier to cope with the

¹⁵ Ministry of Transportation, Compilation of Shipping Court Decisions, Jakarta, Shipping Court Publication, 2012, p. 13.

¹⁶ Huseyn Umar, Indonesian Shipping and The Deregulation Policy, Jakarta, Sinar Harapan Press, 2011, p.267

presence of communication system and report from BMKG (Indonesian Weather Bureau) which is much faster and more accurate.

On the other side, IMO statistics shows that 80 percent of all sea accidents are caused by human error as the result of bad management system of ship owner's company. So there has been special emphasizing that ship company must be responsible for ship safety besides captain, officers and crew of the ship

II.1.3. International Safety Management Code (ISM Code)

ISM Code is an international standard for safety management in ship operation and precaution / control of environment pollution. Based on the awareness to the importance human factor and the need to improve ship operation management of ship accident precaution, human, cargo and properties and to avoid sea pollution to happen; so IMO issued a regulation concerning ship safety management and the protection of sea environment known as International Safety Management Code which is consolidated into SOLAS Convention. Basically, ISM Code regulates that there must be a safety management either shipping company or ship including the human resource handling it.

For shipping company, an officer with the level of manager known as DPA (Designated Person Ashore) must be appointed. He is responsible and conducts monitoring on safety from on behalf of the shipping company. The manager is responsible and has the direct access to the Managing Director / Ship Owner of the shipping company.

For vessel, in every vessel there must be a system and procedure to cope and prevent any disturbance towards safety and in the implementation an officer must be assigned to be responsible in monitoring the safety of ship and pollution prevention from the ship.

In practice, the condition in the field of all over Indonesia shows that the regulation dealing with the report in safety management system is often manipulated. In fact, to maintain the safety of ship and environment, ISM Code system is implemented with Designated Person Ashore (DPA) to monitor the ship and company's management periodically. ISM Code is not applicable for vessels with the measurement < 500 GT. The aim of ISM Code is to provide international standard in ship management and operation which is safe and prevent itself from making any pollution.

For vessels that meet the requirements will be awarded Safety Management Certificate (SMC) whereas freight management which fulfill the regulation will be awarded with Document of Compliance (DOC) by Indonesian Classification Bureau.

II.2. Law Enforcement by The Decision of Maritime Court

Maritime Court is a judicial court which is under the Ministry of Transportation which had the duty to try cases or offences towards the safety of sea voyage which are filed by the

Directorate General of Sea Transportation.¹⁷

Judicial ground for Maritime Court dated from Dutch West Indies in 1934 based on *Ordonantie op de Raad voor de Scheepvaart* published in State Gazette 1938-2 (later was corrected and added) and for the first time a judicial body of court of maritime was established and has the duty to legally settle the ship accident¹⁸. After Indonesia gained its independence, judicial body of court of maritime became Maritime Court of which organization is under the Department of Transportation as explained in Laws of Maritime.

The following table explains several cases which already obtained the decision from Maritime Court;

Table 2

Decision Number	Case	Decision
1010/051/I/MP.10	The burning of KM Samudera Jaya	The burning of the ship was because of electric short circuit. The captain was punished
1011/051/III/MP.10	The sinking of KM Dumai Express-10	The sinking of the ship was because of captain's incapability to navigate in bad weather
1012/051/III/MP.10	Grounding of MT Alexandri in Buton Strait	The ship ran aground because the captain was not accurate in preparing the procedure and navigational equipment
1013/051/III/MP.10	The collision of TB Benua Asia I ship which was towing TK Mudah I on its side with Kapal Pedalaman in the waters	The collision was because of captain's inaccuracy in managing ship movement
1051/051/IV/MP.10	The sinking of KM Karya Rejeki in Karimunjawa waters	The accident was caused by ship leakage on left and right front part and the captain did not pay attention to wind course
1015/051/MP.10	Grounding of KLM Karya Rejeki	The ship ran aground because the captain did not pay attention to environment condition and procedure which was stated by Port Authority

¹⁷ Djoko Triyanto, *Bekerja Di Kapal*, Bandung, PT Mandar MAju , 2005, page 168

¹⁸ Interview with the Head of Maritime Court on 10-10-2011

Decision Number	Case	Decision
1023/051/MP. 10	The collision of KM Marina Nusantara with Tk Bungur which was towed	The collision happened because the captain of KM Marina Nusantara was inaccurate in deciding when his ship sailed into the other ship
1029/051/XII/MP. 10	The burning of KM Wetar	Lack of fire extinguishers and unskilled crew
1011/051/III/MP.10	The sinking of KM Dumai Ekspres-10	Ship leakage which made the ship sink
1030/051/II/MP-11	The sinking of KM Lambela	Unskilled crew
1031/051/II/MP-11	Collision of KM SHINPO-18 With KM BOSOWA VI	Ship leakage of KM Shinpo -18
2010/06/III/MP -11	The shinking of Tanker MT- AB-8	Bad weather
2011/09/VII/MP-11	The Shinking of KM Intan Samudra	Unskilled crew

Source: Decisions of Maritime Court (data was processed)

From the decisions of Maritime Court, it is proven that ship crew did not uphold sea transportation law and violated Indonesian Code of Commerce book II on Sea Transportation Article 342 point 1 which explains that in coping bad weather, a ship captain *Nakhoda* does not anticipate in early time according to the good skills of crew. So that based on the cases above, it can be concluded that the accidents happened because of internal factors:

The master was inaccurate in sailing his vessel and based on above cases, the master was not skilled in managing the course of his ship (going in and out of a port). In the view of the implementation of STCW-95 which commenced on 1st February 2002, in fact, the master and his crew did not entirely implemented SCTW-78 Amended in 1995 and the Decree of Minister of Transportation numbered 70 regulating the crew of commercial vessel. One of the indicators of the accidents above was because of the carelessness of the captain and his crew. The other indicator was mostly captain and his crew have not obtained required certificates (certificate of competence and certificate of profession).¹⁹

¹⁹ Shipping Court, Compilation of Shipping Court Decisions, Year 2010

In view of Port Authority, knowing its strategic institution in the prevention of ship accident, the institution has the right whether a ship is feasible to sail or not. After a ship is technically and juridically examined, the ship then can set sail. Even though a master on board of a ship understands the condition of his ship and the master has the right not to set sail when he knows that his ship is not feasible.²⁰ Regarding the last decision whether a ship can set sail, the Port Authority has the last say. But, in fact, the Port Authority will issue the permit to sail even though safety equipment, are not adequate or even there is passenger over-capacity especially in peak season.²¹ This may happen because port authority officer in the field gets external pressure or there is a possibility that the officer is not professional.

Ship condition. A ship must be equipped with various equipment covering not only their quality but also their quantity. In reality, there is an understanding about the distance of the route the ship sails. It means that if the distance is short, so the equipment are limited. Different quality and quantity of the existing equipment may become the factor of the accident.

Besides internal factor, there are also external factors: Nature factor in Indonesia. Indonesia has so many ridges of corals and this has become the factor of ship accidents, as an example is KLM Karya Rejeki shipwreck. Coral reefs below sea level can cause high risk of accident. So, ships must avoid getting stuck in coral reefs when the ship makes its sea course line on the map.

The physical peculiarity of the Indonesian sea are possibilities of accidents due to the heavy traffic. According to Hamzah , the climate in the Indonesian sea is typically equatorial with uniform high temperature, high humidity and copious rainfall and two main seasons : the Northeast Monsoon (occurs from late November to March) and Southwest Monsoon (occurs from May to September). Strong thunderstroms called Sumatera's may produce gusts of 40-50 knots or higher during the Southwest Monsoon.²² There are dangerous banks composed of sand at the One Fathom Bank Traffic Separation Scheme and Fair Channel Bank²³. (

Port Condition. The port is relatively sensitive for ongoing and ingoing ships such as in the collision case between TB Benua Asia I ship which was towing TK Mudah I ship on its side and *Pedalaman ship*, either in the view of the current, depth and narrow passage.

Navigation. The procedure of navigation beyond the government standards this could be seen from the accident involving Dumai Ekspres and Aleksandria ships. It could happen as the result of poor monitoring and implementation of ISM Code.

There have been the lack of sea navigational equipment such as beacons, buoys and etc which are really necessary for sea passage and port (in view of quality and quantity).

²⁰ Official Rules for the crew of PT PELNI ships Article 6 point 6: The captain or the head of vessel as the skilled seaman, when he wishes to set sail must make sure that his ship has met the requirements of sea feasibility and is entitled to refuse to set sail when his ship does not have seaworthiness.

²¹ Wiwien Imam Subekti, Implementasi Perjanjian Pengangkutan Penumpang Angkutan Laut Antar Pulau di Indonesia, Disertation at Doctoral Program in FHUI, page 300

²² Hamzah, The Straits of Malacca , International Co-Operation in Trade, Funding & Navigational Safety , Petaling Jaya, UM Publication, 1997, page 10

²³Mary. Legal Regime Of The Straits of Malacca and Singapore, Malaysia , Lexis Nexis, 2010, page 10

So, according to those points above and results of research, it is clear that the cause of accidents mostly are caused by human error especially ship crew who are not disciplined and the implementation of laws or regulation of safety.

The other factor which is also important is weather which determines sea safety. Based on a source in KNKT or National Commission on Transportation Accidents, bad weather should have been avoided because bad weather makes a ship automatically not set sail and because of that there is a need to improve the information about weather as well as port and ship's hull and all those described become the responsibility of the government.

II.3. Overview of Types of Marine Pollution

II.3.1. Definition

Pollution is defined as follow : Pollution is defined in the Dictionary of environment and Development as : the addition to the natural environment of substances that, through either their composition or the amount released cannot be rendered harmless by normal biological processes.²⁴ Whereas, UNCLOS stated that :” Pollution of the marine environment” means the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely result in such deleterious effect of harm of living resources and marine life, hazard to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairments of quality for use of sea water and reduction of amenities.”

This definition is the same as definition of Pollution in Indonesian Management Environmental act 32 Year 2009 defines that pollution is any direct or indirect alteration of the physical , thermal, chemical, or biological properties of any part of the environment by discharging, emitting, or depositing environmentally hazardous substances , pollutants or wastes so to affect any beneficial use adversely, or welfare, or to animals, birds, or to plants or to cause a contravention of any condition, limitation, or restriction to which under this Act is subject.²⁵

Pollution as defined in the Dictionary of Environmental Science and Technology, the introduction into environment of substances or affects that are potentially harmful or interfere with species or habitats.

Pollution of Marine environment is defined in Article 1(1)(4) Law of the Sea Conventions (LOSC) as the introduction by men of substances or energy into marine environment which results or is likely to result in one or all of the following four deleterious effects : i harm of living resources , ii hazard to human health, iii hindrance to marine activities (including fishing and impairment of quality for use of sea water and reduction of amenities.

Under this definition, pollution is assumed as the introduction of pollutant in the marine environment. This provision calls for three brief comments.²⁶ First, this is an open definition

²⁴ Malcolm N Shaw, International Law, United Kingdom, 2015, page 450

²⁵ Article 1 Environmental Protection and Management act 32 Year 2014

²⁶ Patricia Birnoe, Alan Boyle, Catherine Redgwell, Oxford Press, United Kingdom, p.381

which may include all resources- the existing and new sources-of marine pollution. Second, the definition covers substances or energy which is likely to result in deleterious effects. It would follow that potentially harmful effects on the marine environment encompasses marine living organisms. Hence the protection of the marine environment also involves the protection of marine species can also become the object of regulation. Third, as shown in the reference to living organisms. Hence the protection of the marine environmental also involve the protection of marine species.²⁷ In other provisions the term is used, however, in the sense of the result of the introduction of pollutants. Combined with chemical characteristics of the water influence the absorptive capacity and carrying capacity of the marine environment. These capacities are predicted to decrease in line with the increase of marine pollution in the straits from land – based sources, dumping and from vessel.

The marine pollution in the straits is polluted by a number of sources as mentioned above. Major oil spill accidents have been reported in the Straits of Malacca and Singapore.²⁸ In January 1975 MV Showa Maru spilled 54,000 barrels of crude oil in the Straits of Malacca; on October September 1992 MV Nagasaki Spirit Collided with MV Ocean Blessing and spilled 100,000 barrels of crude oil and 21 May 1999 the SS Sun Vista spilled 14,000 barrels of fuel oil and sank in the same straits , On April 2008 the 533 ton MV Indah Lestari was in its way to East Kalimantan in Indonesia with some 60 tons of the poisonous industrial chemical phenol and 18 tons of diesel.

Marine environment plays a very important role in maintaining a balance in the overall global eco-system. Tampering with this environment without due thought, would surely result in long term drawbacks. Hence much stress is laid these days on preventing maritime pollution.

The LOSC identifies six sources of Marine Pollution²⁹ :

- i. Pollution from land-based sources.
- ii. Pollution from seabed activities subject to national jurisdiction
- iii. Pollution from activities in the Area
- iv. Pollution from dumping
- v. Pollution from vessels
- vi. Pollution from or through the atmosphere

Based on the principle, these sources of marine pollution can be divided into four principal categories i. land- base marine pollution ii. vessel-source marine pollution, iii. dumping , iv. Pollution from seabed activities.³⁰ The same as Mohamad Naqib stated that the are four main source of marine pollution, namely operation of ships, dumping, sea bed activities, and land based activities. ³¹ Furthermore, Mohammad Naqib wrote that Oil pollution in the oceans is due to major tanker accidents.

Further more, strict regulations are placed in most countries and it is not easy for any ship or company to get away after causing any damage to the marine environment. Marine pollution has various forms such as accidental spillage of oil (which is unfortunate but still understandable as accidents happen in all spheres of industry) due to ship collisions,

²⁷ Yoshifumi Tanaka,2012, *The International Law of The Sea*, Cambridge University Press, United Kingdom.p. 256

²⁸ John G Butcher, *Indonesia Beyond the water's Edge*, Managing Archipelagic State, Indonesia, ISEAS, p. 105

²⁹ Article 1(1)(4) Law of the Sea Conventions (LOSC)

³⁰ Article 1(1)(4) Law of the Sea Conventions (LOSC)

³¹ Muhammad Naqib Ishan Jan, *Principles of Public International Law*, Malaysia, IIUM,2009, at p. 329

grounding etc.

The incidents of deliberate pollution are more worrisome as they pertain to the mindset of the seafarers and companies. For example, in the earlier days, all the waste oil, sewage etc., were dumped into the oceans. All this is strictly prohibited nowadays and regulations prevent any disposal of these materials especially those such as plastics into the oceans.

II.3.2. Nature of casualties involving ships

Vessel-source pollution has two kinds: operational and accidental.³² Operational vessel source pollution is produced by the normal operation of ships. Vessels with oil burning diesel engines discharge some oil with their bilge water, and the fumes discharged through their funnels into the atmosphere will eventually return to the sea. In the early days of tankers operation, it was common practice that oil with their bilge water and the fumes discharged through their funnels into the atmosphere will eventually return to the sea.

Ships have always used the sea on which they navigate to dispose of their operational waste. Formerly, sea consisted of garbage and sanitary waste, but today ships also discharge oily residues, such as bilge water, sludge and oil waste. In addition, chemical and oil tankers wash out dirty tanks at sea and also discharge their ballast water. In the early days of tankers operation, it was common practice that oil tankers washed their oil tanks by means of jets spraying seawater and disposed of the oily residue at sea. As a consequence, a considerable amount of oil was discharged into the sea, causing oil pollution. Currently this problem has been virtually eliminated by load on top and crude oil washing methods.³³ Moreover, the number and the size of ships sailing on the ocean has increased considerably in this century not only in Indonesian but also in almost entirely sea of the world. The cumulative effect of this is a large scale operational pollution. This type of pollution has become a wide spreading problem. It not only affects coastal areas along the main shipping routes, but also vast areas of the oceans where there is little traffic of ships. Vessel-source pollution may damage fishing stock and various forms of marine life, and it also affects the shipping industries. It is, thus essential that state take action to reduce and control vessel source pollution of the sea in order to preserve the marine environment.

Besides vessel, the factors which contribute to the occurrence of marine of marine pollution could be natural conditions, density of traffic and activities, and Legal institutional aspects of pollution control in the sea.

II.3.3. Natural Conditions

Indonesian sea has been identified by Sailing Direction issued by US Defense Mapping

³² P. Birnie, A Boyle and C. Redgwell, *International Law and the Environment*, 3rd edition, Oxford University Press, 2009, p. 399

³³ According to the "load on top" methods, tanks are to be cleaned by high pressure hot water cleaning machines, and resulting oily mixtures into a special slop tank. As oil is lighter than water, oil gradually floats to the surface. Later, only the water at the bottom, is pumped into the sea, leaving only crude oil in the tank. Under the crude oil washing method, the tank is cleaned by using crude oil, i.e. the cargo itself. By spraying the oil onto the sediments clinging to the tank walls, the oil can turn back into usable oil that can be pumped off with the rest of cargo. This method became mandatory for new crude oil tankers of 20,000 tons above by Annex I of MARPOL 73/78 (regulation 13(6)). See www.imo.org/SharePoint?mainframe.asp?topic_id=306.

Agency as the most difficult passage in the world due to shifting of bottom sand, tidal rangers and tidal currents. The sea is a funnel shaper waterway with extremely contrary physical features. The width of the sea varies from 3 miles at the narrowest passage near Singapore Island to 300 miles at the widest near the northwestern entrance between We Island and the Kra Isthmus. At different places, The Sea is quite shallow. The sea is 100 meters deep close to the Continental Slope of the Andaman Sea, full of rocks, dangerous reefs and cross currents.³⁴

Therefore, as mentioned previously the wind in Indonesian Sea is very unpredictable. It is obvious, since the natural conditions are a significant problem in navigation, especially for deep draft vessels such as Very Large Crude Carriers (VLCCs). These physical conditions have contributed to ship groundings, vessel collisions, and other navigational causalities such as the grounding of Showa Maru in 1975, the collision of Nagasaki Spirit and Maersk Navigator in 1992, the grounding of Cathay Shipping 2011, KM Cahaya Line 2012 and KM Harapan III 2013.

II.3.4. Density of traffic and activities

Until now, almost the entire country can not be separated from the various rules of international conventions, where the United Nations to facilitate the establishment of international organizations related to transportation safety.

This is associated with a variety of problem frequent shipping accidents, including the security of shipping, so getting in Indonesia which is considered unable to ensure the safety and security of sea transport activity, including how to carry out enforcement at sea it can say here is no clear who actually has authority of law enforcement at sea on all the problems of safety and security of shipping.

It is also supported by the circumstance that the waters of Indonesia is quite dense waters traversed by ships that ship collisions often occur, Among large enough collision case are:

As the island nation called Archipelagic State, UNCLOS 1982 has required Indonesia to provide sea shipping channel for commercial ships passing through Indonesian waters of the North towards the South and vice versa. The shipping channel known as the Indonesian archipelagic sea lanes (ALKI) designated as the flow of innocent passage for ships - International ships that crossed the ocean waters of Indonesia.³⁵

Vessel source solution presents certain peculiarities in that vessels, normally under the jurisdiction of the flag State, are moveable things which can be found in areas under the jurisdiction of third states which have a particular interest in protecting those areas. In addition, coastal states complain that past experience has shown that flag state legislation is not always adequate to protect their coast offshore living resources.

³⁴ Mochtar Kusumaatmadja, (1998) Control of Marine Pollution In The Straits of Malacca and Singapore: Modalities For Internatnaol Co-operation. Article from Singapore Journal of International & Comparative Law Journal 2 p 453.

³⁵ Hussyen Umar, Hukum Maritim dan Masalah Masalah Pelayaran di Indonesia, Jakarta, PT Sinar Harapan, 2011, hlm 267

While knowledge, understanding, professionalism which are needed by ship crews in anticipating the risk of the accidents such as the fire that burns some part of the ship or even when the whole ship is exploded; The ship collision that might happen , collision with other ship or crashing pier or other objects in the sea. ; sinking, ship wrecked, ship capsized either temporarily or permanently. ; leakage in the ship that makes the ship sink as well as hypothermia risk, sea pollution occurrence and the damage of the environment. ³⁶

The operations of ship that causes pollution, needs a treatment to avoid worse pollution. The regulation that applied to the treatment is MARPOL 73/78. It contains a set of regulations regarding sewage and garbage into the sea. Ship equipment to prevent the collision and any other accidents.

Table 3
The Analysis of Sea Transportation Accident Characteristic

	ACCIDENT TYPE	Object
WHAT	Accident Type and Safety Indicator	
	a. Accident Type : Drown, Burn/fire, Collision, Sink	Engine Ship, Sail Boat, Motor, Tug Boat, barge, Tanker
	b. Accident Level	
	Possible Cause of Accident	
WHY	a. Human Factor	
	<ul style="list-style-type: none"> • Carelessness in operating the ship • Inability of the crew in mastering various skills in problem handling which may occur in operational of the ship. • Realizing that the carrier load too much goods 	Captain of the ship, Ship Crews, Port Control Officers, Passengers
	b. Technical Factor	Ship Owner, Marine Inspector,
	<ul style="list-style-type: none"> • Inaccuracy in designing the ship • Inability of crews to master various possible problem handling when there is accident during operating the ship • Realizing that the ship is overloaded • Ignorance of ship maintenance that causes damage to the ship parts or to the ship causes accidents, burn/fire. 	Ship Staff, Dock Officials, Ship Equipment Supplier, Ship flow, Port Pond, Information from Metereological, Climate and Geophysics Office.
	c. Natural Factor	
	d. Bad weather; storm, high tide, overrated current, fog that causes limited sighting range.	

As a long –term member of the IMO , Indonesia has ratified carious international maritime conventions on marine safety and marine protection. Indeed, with so much to gain from

better safety at sea, Indonesia has ratified various international maritime conventions and IMO convention as well more than any other nation in South east Asia.

Indonesia's ratification of IMO conventions gives it rights and responsibilities as a flag state, it has the responsibility to ensure that ships comply with international regulation on technical management and labour. At the moment , there are 2,131 designated port in Indonesia consisting Of 975 regular ports and 1,156 special ports. There are four main port are Balawan in Medan, Tanjung Priok in Jakarta, tanjung Perak in Surabaya dan Makasar.³⁷ This is not an easy effort to establishment of controlling port in Indonesia in order to obey the International and National regulation.

III. CONCLUSION

Even though ship is an important component of international trade, the use of ships due to marine pollution. Commercial fleet on the marine environment due to accidents and special purpose, legal and illegal pollution during routine operations in the ocean or dock. Beside National and International Regulation, Indonesia ship must comply with International standard since Indonesia is a member of IMO .

The hindrance Factors concerning increasing of Indonesian business transportation include: insufficient marine transportation safety and high risk, high cost of marine safety and marine environmental pollution. In addition to low performance and competition factors, the natural condition of Indonesia worsens the potential for pollution problems.

It might be possible that the Marine Inspector of the Ministry of Transportation made some notes to the feasibility of ship safety equipment in the certificate that he issued so that the owner of the ship should make some improvement when the certificate must be renewed. If in emergency situation, those equipment do not function well, then they should be blamed. If the Marine Inspector does not perform his work accordingly, they should also be questioned for their responsibility.

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³⁷ Baatz Yvonne. 2011. *Maritime Law*. London. Sweet & Maxwell.

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